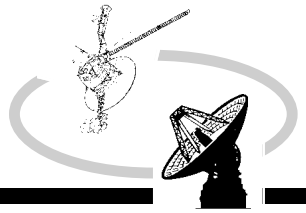
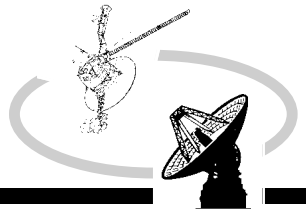
W-band Assessment
Agenda



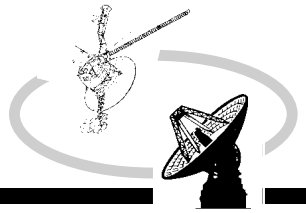
- **W-band receiver status (Seiffert)**
- **Blind pointing model development (Richter)**
- **Strawman task plan (Teitelbaum)**
- **Initial observing campaign (all)**



DSS-13 W-band Assessment

- **Receiver Development**
  - ●●● **Complete the phase stabilization of the W-band receiver**
  - ●●● **Complete the development of computer-controlled noise temperature calibration instrumentation**
  - ✓ **Optimize noise temperature performance on the telescope**
- **Pointing and Efficiency**
  - ●●● **Assess the blind pointing capability with point source targets**
  - ✓ **Measure aperture efficiency as a function of azimuth and elevation**
  - ●●● **Apply raster scan technique to characterize the RF beam at W-band and to improve blind-pointing and efficiency estimation**
  - ●●● **Assess capability of DSS-13 antenna servo system to support precise W-band tracking**
- **Telecommunications**
  - ✓ **Review existing W-band telecommunication literature**
  - ●●● **Perform updated W-band link analysis**
  - X **Study feasibility of a laboratory demonstration of a 10 Gbit/sec data link**

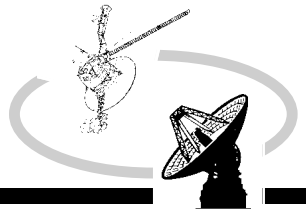
W-band Assessment
FY2002 Planned Accomplishments



- **Sustain and optimize the W-band receiver**
  - **Complete the phase stabilization of the W-band receiver (Q2)**
  - **Complete the development of computer-controlled noise temperature calibration instrumentation (Q2)**
- **Quantitatively characterize and optimize the W-band blind-pointing capability (Q2)**
- **Systematically measure the aperture efficiency (Q3)**
- **Examine implementation options for improving aperture efficiency (Q4)**
- **Complete W-band link analysis (Q3)**

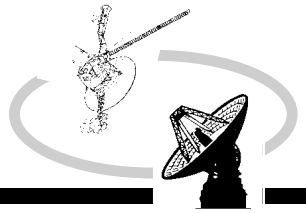
Work Area Resources	FY01	FY02
Funding ($k)	75	125
Workforce (FTE)	0.5	0.75

W-band Assessment
Final Offer



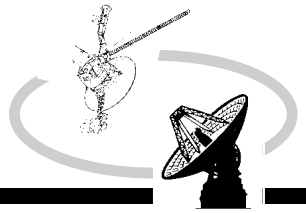
- **$100K from TMOT in Ground Antenna Systems work area**
- **FY2002 planned accomplishments, which will serve as "scorecard" at next year's annual review**
  - **Sustain and optimize the W-band receiver**
    - **Complete the phase stabilization of the W-band receiver (Q2)**
    - **Complete the development of computer-controlled noise temperature calibration instrumentation (Q2)**
  - **Develop blind-pointing capability for W-band (Q2)**
  - **Systematically measure the antenna aperture efficiency (Q3)**
- **Disconnect between "intend to complete classification" and financial resources - how do we bridge the gap?**
  - **Apply for mid-year proposals**
  - **Discretionary work - draw distinction between commitments to sponsoring organization and goals (unfunded mandates) for the team as keepers of the W-band flame**
- **Implications of FY2001 inability to keep our commitments**
- **Team structure and workforce planning for FY2002**
  - **<u>Very</u> small number of financially supported "doers"**
    - **Durgadas Bagri (3-4 work months)**
    - **Section 333 receiver support from Sam Petty's group (2-3 work months)**
    - **Paul Richter (TBD, <3 work months)**
  - **Full team acting discretionarily, both as intellectual resource and as "doers" to grow the program - no overt financial support, no explicit accountability other than to the team**

W-band Assessment
Ways To Do More



- **Potential Discretionary Work Items (No additional funding)**
  - **Complete W-band link margin study (Teitelbaum)**
  - **Explore implementation options to improve efficiency (Teitelbaum)**
  - **Apply raster scan technique at W-band (Rochblatt/Richter)**
  - **Obtain data for antenna servo system study (Roch/Rich/Gawronski)**
  - **Develop detectable point source catalog (observing team)**
  - **Obtain first fringes (TBD)**
- **Possible Mid-year Augmentations (Mid-year funding from IPN-IST)**
  - **Perform servo system assessment study (Gawronski)**
  - **Participate as W-band VLBI station in CMVA opportunities (??)**
  - **10 Gbit/second work (Gaier??)**

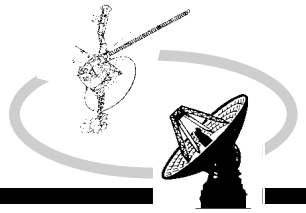
W-band Assessment
Strawman Task Plan



- **Complete the phase stabilization of the W-band receiver (Q2)**
- **Complete the development of computer-controlled noise temperature calibration instrumentation (Q2)**
- **Develop blind-pointing capability for W-band (Q3)**
- **Measure the antenna aperture efficiency (Q3)**

- **Obtain first fringes (Q3)**
- **Apply raster scan technique at W-band (Q3)**
- **Obtain data for antenna servo system study (Q3)**
- **Complete W-band link margin study (Q3)**
- **Explore implementation options to improve efficiency (Q4)**
- **Develop detectable point source catalog (Q4)**

W-band Assessment
Initial Observing Campaign



- **Cultivate an observing team**
  - **Seiffert, Bagri, Teitelbaum, Jones, Kuiper, …**
- **Initial DSS-13 commitment - one prime shift pass per week**
  - **After Mike S "blesses" the receiver**
  - **Usage to be coordinated by observing team**
- **Additional observing time can be requested by anyone**
  - **Requestor is responsible for observation**